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Unmanned Surface Vehicles: Reducing Risks for Joint Surface Force Protection Operations

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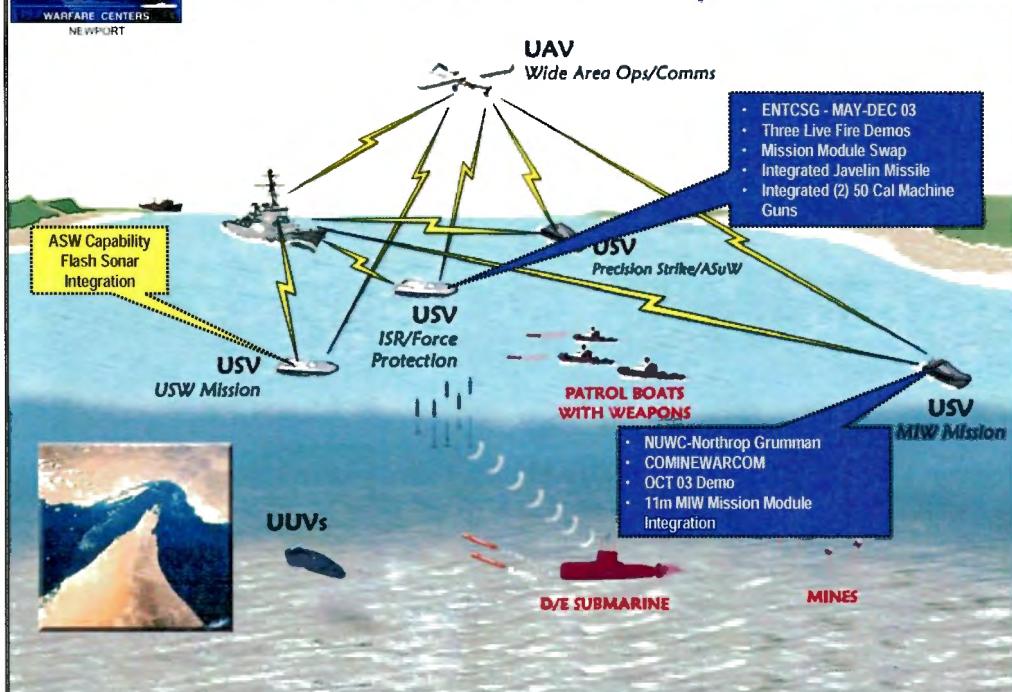
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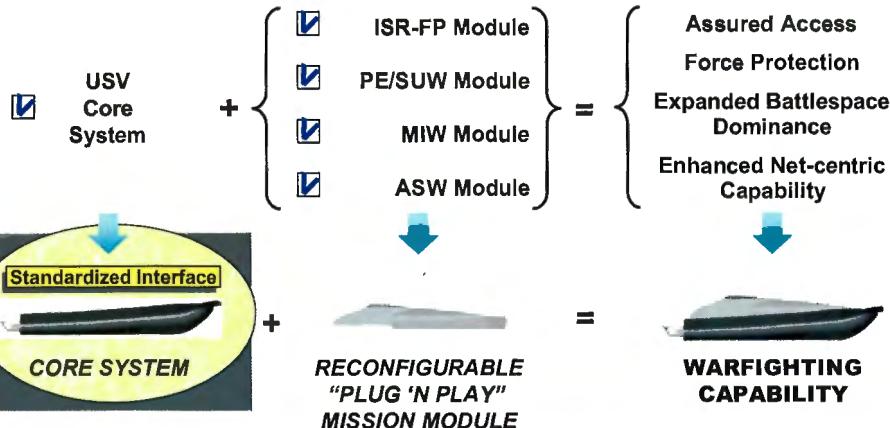
SPARTAN USV Concept





SPARTAN SCOUT ACTD

Plug 'n Play Modularity Increases Capability



MODULAR PLATFORM ENABLES ADAPTABILITY TO MEET NUMEROUS WARFIGHTING NEEDS WITH ONE CORE SYSTEM



SPARTAN USV Accomplishments



- Initial Unmanned Surface Vehicle (USV) Concept – 2001**
- Fleet Battle Experiment Participation - 2001**
- Established Joint Service/Multi-National OSD ACTD – 2002**
- USS Enterprise Carrier Strike Group Deployment - 2003**
- Completed three USV Force Protection "Live Fire" Tests – 2004/05**
- Selected as Littoral Combat Ship ASW Mission Package - 2004**
- Demonstrated Mine Warfare Capability - 2005**
- Demonstrated Multiple USV Command and Control – 2005**
- Coordinated "Live Fire" demonstrations with USN Weapon System Explosive Safety Review Board (WSESRB)**
- Final Military Utility Assessment (MUA) for IRS/FP in early January 2006**



NUWC USV Utilization



- Selected as Littoral Combat Ship ASW Mission Package - 2004
- Exercise Torpedo Launch - 2005
- Demonstrated ASW Dipping Sonar capability with sensors from multiple vendors - 2004/05
- Demonstrated Mine Warfare Capability - 2005
- Demonstrated Multiple USV Command and Control - 2005
- Part of Shipboard Protection System CONOPS



Multi-Vehicle Command and Control



Weapon, Countermeasure
and UUV Surrogate

ASW Dipping Sonar (HELRAS & FLASH)

MIW Towed Sonar (AQS-24 & Sweep)

USV Home Land Security Applications



- Recent Successful Demonstrations are the building blocks for
 - Harbor Defense/Port Security
 - ISR/FP USV with Force Protection Demonstrations
 - Provides a means to show presence, deter, counter or engage asymmetric threats
 - Provides Electro-Optical and Infrared (EO/IR) capability for daylight, night and low visibility operations
 - Provides safe stand-off distance to perform surveillance, allows time to mobilize additional response(s) as necessary
 - Other applications are available such as Chemical, Biological and Radiological Detection
 - Potential for Integration with Automatic Identification System (AIS)
 - Escort Missions
 - Alleviates the need for manned Port Escort from USCG
 - U.S. Submarine Base Groton Demonstration
 - Provides visual presence at safe stand-off ranges





USV HLS Applications (Continued)



- Maritime Interdiction/Drug Operations
 - EO/IR Surveillance
 - Enterprise CSG Deployment
 - Boarding Team distance support
 - Hailing capability/Verbal exchanges
 - ECSG and USCG demonstrations
- Multiple Vehicle Unmanned Demonstration
 - Demonstrated the first step in addressing small boat threats with multiple ISR and FP USVs
 - Provides a method to test multiple autonomous vehicles
 - Demonstrated control from secondary remote site



Basic Equipment and Sensors



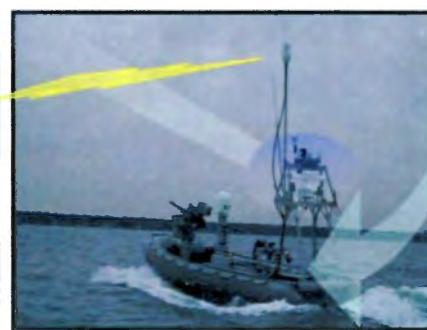
Equipment Arch



Electronic Enclosures



Operator Workstation





Summary



- Modular interfaces for Mission Module developers with additional concepts**
- Accomplishments of the SPARTAN ACTD and other USV development efforts have proven the technology**
- USVs have demonstrated applicability for HLS applications**
 - ISR with EO/IR sensors with FP add deterrence and engagement capabilities
 - Harbor Defense/Port Security Protection
 - Escort Missions
 - Maritime Interdiction and Drug Operation support can be accomplished at safe stand-off ranges